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NATIONAL AERONAUTICS  
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NASA-08710 (June 2004)  
NASA  
Superseding NASA-08710  
(June 2003)  
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DIVISION 08 - DOORS AND WINDOWS

SECTION 08710

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SECTION 08710

DOOR HARDWARE  
06/04

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NOTE: Delete, revise, or add to the text in this section to cover project requirements. Notes are for designer information and will not appear in the final project specification.  
  
This broadscope section covers builder's finish hardware, locks and door trim, hinges, closers, door stops, UL-listed fire exit hardware, pulls, plates, and miscellaneous hardware.  
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PART 1 GENERAL

1.1 REFERENCES

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NOTE: The following references should not be manually edited except to add new references. References not used in the text will automatically be deleted from this section of the project specification.  
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The publications listed below form a part of this section to the extent referenced:

ALUMINUM ASSOCIATION (AA)

AA 45 (2003) Designation System for Aluminum Finishes

BUILDERS HARDWARE MANUFACTURERS ASSOCIATION (BHMA)

BHMA A156.1 (2000) Butts and Hinges  
BHMA A156.13 (2002) Locks and Latches, Mortise  
BHMA A156.16 (2002) Auxiliary Hardware  
BHMA A156.18 (2003) Hardware - Materials and Finishes  
BHMA A156.2 (2003) Bored and Preassembled Locks and Latches  
BHMA A156.21 (2001) Thresholds

BHMA A156.3	(2001) Exit Devices
BHMA A156.4	(2000) Door Controls (Closers)
BHMA A156.5	(2001) Auxiliary Locks & Associated Products
BHMA A156.6	(2001) Architectural Doors and Trim
STEEL DOOR INSTITUTE (SDI)	
SDI 100	(1998) Standard Steel Doors and Frames
UNDERWRITERS LABORATORIES (UL)	
UL Bld Mat Dir	(2003) Building Materials Directory

## 1.2 SUBMITTALS

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NOTE: Review submittal description (SD) definitions in Section 01330, "Submittal Procedures," and edit the following list to reflect only the submittals required for the project. Submittals should be kept to the minimum required for adequate quality control. Include a columnar list of appropriate products and tests beneath each submittal description.

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The following shall be submitted in accordance with Section 01330, "Submittal Procedures," in sufficient detail to show full compliance with the specification:

### SD-01 Preconstruction Submittals

The following shall be submitted in accordance with paragraph entitled, "General," of this section.

Finish Schedule  
 Hardware Schedule  
 Material, Equipment and Fixture Lists  
 Finish Hardware b

### SD-03 Product Data

Manufacturer's catalog data shall be submitted for the following items:

Fasteners  
 Hinges  
 Locksets  
 Exit Devices  
 Pulls and Push Plates  
 Thresholds  
 Lever Extension Flush Bolts  
 Closers  
 Astragals

Coordinating Device  
Door Holders  
Door Stops  
Door Silencers  
Metal Kick Plates  
Metal Mop Plates  
Metal Armor Plates  
Door-Sill Weatherstripping  
Rain drips  
Meeting Rails

#### SD-07 Certificates

Certificates shall be submitted for the following items showing conformance with the referenced standards included in this section.

##### Fasteners

Hinges  
Locksets  
Exit Devices  
Pulls and Push Plates  
Thresholds  
Lever Extension Flush Bolts  
Closers  
Astragals  
Coordinating Device  
Miscellaneous and Shelf Hardware  
Weatherstripping Materials

#### SD-08 Manufacturer's Instructions

Manufacturer's Instructions shall be provided by the Contractor in accordance with paragraph entitled, "General," of this section.

### 1.3 GENERAL

A Finish Schedule shall include a Hardware Schedule indicating the door and frame location, type, size, swing, bevel, material, hardware type by Builders' Hardware Manufacturers Association (BHMA) numbers, and the respective manufacturer's type, name, number, finish, and design. Material, Equipment and Fixture Lists shall be provided prior to the hardware schedule, showing a list of the proposed Finish Hardware by manufacturer, type, name, series, material and finish.

Manufacturer's Instructions for finish hardware shall indicate the manufacturer's recommended method and sequence of installation.

## PART 2 PRODUCTS

### 2.1 FASTENERS

Fasteners of the proper type, size, quantity, and finish for each hardware item shall be provided. All visible fasteners shall be phillips-head, bronze or stainless steel finished to match specified hardware.

## 2.2 HINGES

Hinges shall be full mortise, heavy weight, anti-friction bearing, button tip, template type conforming to BHMA A156.1, Grade 1. Size shall be 4-1/2 by 4-1/2 inches. nominal 114- by 114 millimeter.

## 2.3 LOCKSETS

### 2.3.1 General

Cylinder bored locksets and latchsets shall conform to BHMA A156.2, plain design and wrought trim.

Mortise locksets and latchsets shall conform to BHMA A156.13.

Locksets and latchsets shall have standardized fronts, cases, and strikes so that varying functions will be interchangeable and will require only one mortise for their installation. Locks and latches shall have beveled bronze fronts, bronze bolts and strikes, brass hubs, and cases with specified finish. Locks shall have cylinders conforming to BHMA A156.5.

Locksets and lock cylinders shall be master keyed to the key system established for the installation.

### 2.3.2 Cylinder Bored Locksets

Cylinder bored locksets and latchsets for fire-rated doors shall be UL listed and labeled, heavy duty, Series 4000, Grade 1.

Heavy duty usage cylinder bored locksets and latchsets shall be Series 4000, Grade 1.

Medium duty usage cylinder bored locksets and latchsets shall be Series 4000, Grade 2.

### 2.3.3 Mortise Locksets

Mortise locksets and latchsets for fire-rated doors shall be UL listed and labeled, heavy duty, Series 1000, Grade 1.

Heavy duty usage mortise locksets and latchsets shall be Series 1000, Grade 1.

Medium duty usage mortise locksets and latchsets shall be Series 1000, Grade 2.

## 2.4 EXIT DEVICES (PANIC HARDWARE)

Exit devices shall be [RIM Type] [Surface Vertical Rod Type] [Concealed Vertical Rod Type] as defined in BHMA A156.3.

## 2.5 PULLS AND PUSH PLATES

Pulls and push plates shall conform to BHMA A156.6, types and material specified herein.

Door pulls on plates shall be Type J405, specified finish, with the wrought plate not less than 14 by 3-1/2 inches by 0.050-inch 356 by 90 millimeter by 1.3 millimeter thick, grip center to center, 6 inches, 150 millimeter,

with cutouts for cylinders and thumb turns as required.

Push plates shall be [wrought brass], [aluminum], [stainless steel], specified finish, Type J301 or J302, not less than 3-1/2 by 14 inches by 0.050-inch 90 by 356 millimeter by 1.3-millimeter thick, with cutouts for cylinders and thumb turns as required.

## 2.6 THRESHOLDS

Thresholds shall be [extruded aluminum 6063-alloy] [architectural bronze] mill finish conforming to BHMA A156.21, [Type J601 (corrugated)] [Type J602 (abrasive)] [Type J603 (Interlocking Hookstrip)] [Type J604 (vinyl)] weatherstrip.

Thresholds shall be provided for the full width of the opening at exterior doors.

## 2.7 LEVER EXTENSION FLUSH BOLTS

Flush bolts shall be cast or extruded brass or aluminum, specified finish, conforming to BHMA A156.16, with 12-inch 300 millimeter lever extensions.

Flush bolts shall be a type listed in UL Bld Mat Dir for fire-rated doors.

## 2.8 CLOSERS

Closers shall conform to BHMA A156.4.

Closers shall be the surface mounted heavy duty, parallel arm type, Grade 1. Style shall be [traditional] [modern].

Hold-open devices shall be provided on all closers except labeled doors and exterior doors.

Brackets, reinforcing plates, and accessory fittings shall be provided as required.

## 2.9 ASTRAGALS

Astragals shall be prime steel, 13-gage 2.3 millimeter minimum by 1-5/8-inch 41 millimeter side minimum.

## 2.10 COORDINATING DEVICE

A coordinating device shall be provided for each pair of doors with an overlapping astragal or with rabbeted stiles.

Coordinating devices shall conform to BHMA A156.3, bronze or stainless steel, finish to match the locksets.

## 2.11 MISCELLANEOUS AND SHELF HARDWARE

### 2.11.1 General

Miscellaneous hardware shall conform to BHMA A156.16, except as noted, and shall match or have the same finish as lockset finish.

### 2.11.2 Door Holders

Door holders shall be [lever type with replaceable rubber tip, Type L01381] [Plunger type with replacement rubber tip, Type L01401] [foot bolt type with strike, Type L01421], conforming to BHMA A156.16

### 2.11.3 Door Stops

Door stops and bumpers shall conform to BHMA A156.16.

Wall mounted stops shall be [Type L02061 (4 inches 100 millimeter flexible projection)] [Type L02101 (wall bumper)]. Where impossible to install wall mounted stops, floor mounted stops, Type L02141 (dome type) or Type L02161 (dome type for door with thresholds) shall be provided.

### 2.11.4 Door Silencers

Door silencers conforming to BHMA A156.16 shall be provided except on fire-rated door frames.

Door silencers shall be Type L03011 for metal frames and Type L03021 for wood frames.

### 2.11.5 Metal Kick Plates, Metal Mop Plates, and Metal Armor Plates

Plates shall be 0.050-inch 1.3 millimeter thick [stainless steel] [wrought brass] [aluminum], bevel edge, Type J101 (Armor), Type J102 (Kick), or Type J103 (Mop), conforming to BHMA A156.6, finish as specified herein. Width of kick, mop, and armor plates shall be 2 inches 50 millimeter less than the door width. Height of kick plates shall be 8 inches. 200 millimeter. When the bottom rail of the door is less than 8-1/2 inches, 215 millimeter, the kick plates shall extend to within 1/2 inch 13 millimeter of the panel mold or bead.

## 2.12 WEATHERSTRIPPING MATERIALS

### 2.12.1 Door-Sill Weatherstripping

Weatherstripping shall consist of a 1/8-inch thick by 1-3/8-inch-high 3-millimeter thick by 35-millimeter high neoprene strip housed in an extruded, [anodized aluminum] [architectural bronze] housing approximately 0.070-inch thick by 1-1/4-inches high 1.8-millimeter thick by 32-millimeter high by the full width of the door and attached to the door with countersunk screws.

### 2.12.2 Rain Drips

Drip for installation on the door exterior at the sill shall be [extruded aluminum] [mill-finish architectural bronze] approximately 0.094-inch thick by 1-3/8-inches deep by 5/8-inch 2.4 millimeter thick by 35-millimeter deep by 16 millimeter projection.

### 2.12.3 Meeting Rails

Weatherstripping for pairs of single-acting exterior doors shall consist of 1/8-inch thick by 3/4-inch wide 3-millimeter thick by 19-millimeter wide [feather-edged] [taper-edge] neoprene strips housed in extruded [anodized aluminum] [architectural bronze] Z-shape strips 0.065-inch thick by 1-inch wide 1.65-millimeter thick by 25-millimeter wide by the full height of the



opening. There shall be one strip on each leaf overlapping.

## 2.13 FINISHES

Hardware shall receive the following finish(es) conforming to BHMA A156.18, as follows:

Hinges, locksets and latchsets	Satin aluminum, clear anodized, on aluminum, BHMA Code 628
Hinges, locksets and latchsets	Satin bronze, clear coated, on bronze, BHMA Code 612
Hinges, locksets and latchsets	Satin chromium plated on brass or bronze, BHMA Code 626
Hinges, locksets and latchsets	Satin stainless steel, BHMA Code 630
Hinges at labeled openings	Plated satin bronze, clear coated, on steel, BHMA Code 639
Hinges at labeled openings	Satin chromium plated on steel, BHMA Code 652
Hinges	Primed for painting, steel, BHMA Code 600
Exit bolts (panic hardware)	Match locksets and latchsets
Closers	Sprayed, matching locksets and latchsets
Lever extension flush bolts	Satin aluminum, clear anodized, BHMA Code 628
Lever extension flush bolts	Satin bronze, clear coated, BHMA Code 612
Push-pulls	Satin aluminum, clear anodized, BHMA Code 628
Push-pulls	Satin bronze, clear coated, BHMA Code 612
Door stops, door holders, weatherstripping, astragals	Match locksets and latchsets

Aluminum hardware items shall be anodized to an Architectural Class II natural finish not less than 0.4-mil 0.01 millimeter thick conforming to AA 45 (designation AA M21 C22 A31).

## PART 3 EXECUTION

### 3.1 GENERAL

Hardware shall be installed and adjusted in accordance with the hardware manufacturer's printed instructions and to template dimensions.

Temporary-construction cores shall be furnished, installed, and maintained in locks during construction and removed when directed.

### 3.2 HARDWARE LOCATION

Hardware shall be located in accordance with SDI 100, Table V, except when template dimensions and multiple-item installations require alternate locations.

### 3.3 HARDWARE SCHEDULE

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NOTE: If a hardware schedule is included on the drawings with the door/frame schedule, then this article should be deleted. The specifier should not duplicate information supplied on the drawings, but should ensure that all required hardware information is supplied to successfully satisfy project requirements.  
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-- End of Section --